16:32:04 OCA PAD INITIATION - PROJECT HEADER INFORMATION 09/27/90

Active

Project #: D-48-656 Cost share #: Rev #: 0
Center # : 10/24-6-R7054-0A0 Center shr #: OCA file #: 164
Work type : RES
Contract#: DACA88-89-D-0006-0007 Mod #: Document : DO
Prime #: Contract entity: GTRC

Subprojects ? : N
Main project #:

Project unit: DEAN ARCH Unit code: 02.010.170
Project director(s):
CIRCEO L JR DEAN ARCH (404)894-3390

Sponsor/division names: ARMY / CON ENG RES LAB, IL
Sponsor/division codes: 102 / 020

Award period: 900905 to 901130 (performance) 901130 (reports)

Sponsor amount	New this change	Total to date
Contract value	77,964.00	77,964.00
Funded	77,964.00	77,964.00
Cost sharing amount		0.00

Does subcontracting plan apply ?: N

Title: SOFTWARE FOR KNOWLEDGE WORKER SYSTEM, VERSION 1.0

PROJECT ADMINISTRATION DATA

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P.O. BOX 4005
CHAMPAIGN, IL 61824-4005

Security class (U,C,S,TS) : U ONR resident rep. is ACO (Y/N): N
Defense priority rating : DO-C2 NA supplemental sheet
Equipment title vests with: Sponsor X GIT

Administrative comments -
FIXED PRICE DELIVERY ORDER SUBJECT TO THE TERMS OF BOA DACA88-90-D-0006 (OCA FILE NO. 164).

OCT 1990
RECEIVED
SUPPORT SERVICES
OCA

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

NOTICE OF PROJECT CLOSEOUT

Closeout Notice Date 02/11/91

Project No. D-48-656 Center No. 10/24-6-R7054-0A0

Project Director CIRCEO L JR School/Lab DEAN ARCH

Sponsor ARMY/CON ENG RES LAB, IL

Contract/Grant No. DACA88-90-D-0006-0007 Contract Entity GTRC

Prime Contract No.

Title SOFTWARE FOR KNOWLEDGE WORKER SYSTEM, VERSION 1.0

Effective Completion Date 901130 (Performance) 901130 (Reports)

Closeout Actions Required:	Y/N	Date Submitted
Final Invoice or Copy of Final Invoice	Y	
Final Report of Inventions and/or Subcontracts	Y	
Government Property Inventory & Related Certificate	Y	
Classified Material Certificate	N	
Release and Assignment	Y	
Other	N	

Comments

Subproject Under Main Project No.

Continues Project No.

Distribution Required:

Project Director	Y
Administrative Network Representative	Y
GTRI Accounting/Grants and Contracts	Y
Procurement/Supply Services	Y
Research Property Managment	Y
Research Security Services	N
Reports Coordinator (OCA)	Y
GTRC	Y
Project File	Y
Other	N
	N

NOTE: Final Patent Questionnaire sent to PDPI.

KNOWLEDGE WORKER SYSTEM
MONTHLY STATUS REPORT
September, 1990

Prepared Under Contract
DACA88-90-D-0006-0007

Submitted to:

Department of the Army
CONSTRUCTION ENGINEERING RESEARCH LABORATORY
Champaign, Illinois

Prepared January 23, 1991 by:
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia

KWS Prototype Development
Monthly Status Report
September 1990

Accomplishments

During September, we George Olive travelled to Washington, DC to brief John Sheehey on the design for KWS Version 1. John exressed concern over the use of a local area network as the central communications scheme in KWS. After some discussion, he authorized us to proceed with the plan as it was presented.

John Sheehey asked Jerry Goudelocke to comment on CEMP's current network setup. Jerry said that it was an unacceptable system.

While in Washington, it was decided by USA-CERL that Georgia Tech should send a person to review the CEMP local area network.

Plans for October

Code KWS Version 1, using Gupta Technologies, SQLbase.

Travel to Washington DC to review CEMP lan.

Problems

The Gutpa Gateway to Oracle turns out to be in beta test, and is not available as a product.

KNOWLEDGE WORKER SYSTEM
MONTHLY STATUS REPORT
October, 1990

Prepared Under Contract
DACA88-89-D-0006-0007

Submitted to:

Department of the Army
CONSTRUCTION ENGINEERING RESEARCH LABORATORY
Champaign, Illinois

Prepared January 18, 1991 by:
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia

KWS Product Development
Monthly Status Report
October, 1990

Accomplishments

During October, Beverly Thomas came to Georgia Tech to discuss the project. In attendence were Berverly Thomas from CERL and George Olive, Mike Jones, and Rich Erwin from Georgia Tech. A schedule of development and deliverables was discussed and agreed upon. The current status of the KWS software was discussed. Three trips to Washington, D.C. were planned for George Olive.

Reports describing the project milestones for three projects were created and delivered. Reports describing hardware platforms, the software testing plan, the short range development plan for the project, and a specifications checklist were prepared and delivered.

George Olive travelled to Washington and evaluated CEMP's local area network.

KWS version 1.0 coding continued in C, accessing Gupta Technologies' SQLbase.

Sample data from McClendon Automation was received for testing purposes.

Gupta Technologies' SQLRouter/Oracle software for gateway communication to Oracle SQL*Net was received.

Plans for November

Travel to Washington, D.C. for executive meetings.

Finish initial coding of KWS, incorporating remote DB communications.

Start to write the users' manual and technical guide.

Problems

The SQLRouter/Oracle does not work. For some reason, it will not allow connection to the remote database server. The error message presented by Windows 3.0 states that this is a memory problem. We are in contact with Gupta Technologies and are trying to fix the problem.

TRIP REPORT: 25-26 Oct 90

Report Filer: George Olive Location: CEMP-P (DC)

On October 25-26, 1990 I visited CEMP-P to review the local area network installed there and to make recommendations for improving its usefulness to the CEMP-P personnel. This report presents the results of this analysis.

The network as it was operating when I got to CEMP-P was causing a lot of user complaints and many users stated that it was not working. The two major complaints were:

Inability to send output to network printers

and, inability to run programs.

The user's belief the network was not working was further reinforced by a number of printers and plotters that were not connected to the network.

In actuality, the network was operational. All user accounts were set up and all the files from the old network were installed. The user's problems resulted from a number of causes:

When the contractors upgraded the network, they took directions from several different people at CEMP-P. This caused them to have to reinstall the system several times. The extra work involved exhausted the funds allocated for user training, and customization.

After the network was installed, CEMP-P personnel immediately started modifying the file setup to conform more closely with the way the network had run in the past. One modification was done incorrectly requiring the contractor to reinstall the network software on the users machines another time.

Additionally, because of the fire, some of the printers that were to be hooked to the network were not available while the contractors were on site installing the network.

The contractors did not provide documentation. Two kinds of documentation should have been provided. One set describing the technical aspects of the network setup. And, a second set describing the basic information a user would need to access programs and data on the network, as well as to send reports to the various network printers.

Finally, the users were never trained in how to use the network effectively.

Corrective Actions

The following steps should be taken to make the network useful to CEMP-P workers:

First, the remaining printers and plotters should be connected to the network.

Second, the network file layout changes started by CEMP-P personnel should be

completed.

Finally, user and technical documentation should be produced.

The connection of the remaining printers should be a relatively easy task. The CEMP-P network administrator should be involved in this effort so that he will be able to add and/or reconfigure network printers in the future.

Customizing the CEMP-P Network Environment

The changes to the locations of the network files should not continue to be made on the set the users are using. There is a second server that is almost empty. This server should be used for setting up the file structure and testing that all the menus work correctly before the users are exposed to the change.

Several factors should be considered when designing these changes. A utility should be written to aide the users in directing reports to the desired printer. Files should be logically located so as to facilitate users in relocating files, whether they chose to use the CEMP-P menu system, the DOS command line, or some other program (such as Microsoft Windows).

When the menus are in place and tested, then all users should be switched to the other server at one time. This approach will buffer the users from a constantly changing environment. Once testing is complete and users are switched to the production environment, users should be provided with documentation that explains what users need to know to use the network effectively.

D-48-656

KNOWLEDGE WORKER SYSTEM TESTPLAN REPORT

Prepared Under Contract
DACA88-90-D-0006-0007

Submitted to:

Department of the Army
CONSTRUCTION ENGINEERING RESEARCH LABORATORY
Champaign, Illinois

Prepared October 22, 1990 by:
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia

Testing Plan for KWS Software

This document summarizes the testing plan to be used by CERL in evaluating the KWS. The KWS software is version 1.0 that is to be delivered November 19, 1990. Following the delivery, CERL will spend two periods of testing in order to evaluate the KWS software. The first period will be from November 19 - 23, 1990, immediately following the installation. The second period of evaluation will be on January 14, 1991 during the demonstration and briefing report of KWS.

The process of reporting changes and bugs will proceed as follows. When a member of CERL recognizes an item that must be reported, he or she will fill out the proper report form. On the form he or she will enter his or her name, the date, the version of the software being tested, and a description of the problem. These reports will be physically handed to a Georgia Tech representative, during the dates specified above. Georgia Tech will respond to the requests of the first period by the beginning of the second period on January 14. Any requests that are submitted by CERL during the second period will be attempted to be corrected by the installation date (Feb 02, 1990). Any requests that cannot be corrected by the installation date will be processed during the support period that follows. A sample of the change and error (bug) reporting forms follow.

THE KNOWLEDGE WORKER SYSTEM
Change Report Form

Date: _____ Name: _____

Software Version #: _____

Description of change: _____

_____

_____

_____

_____

_____

_____

_____

_____

Handled at GT by: _____ Date: _____

THE KNOWLEDGE WORKER SYSTEM
Error Report Form

Date: _____ Name: _____

Software Version #: _____

Description of error: _____

_____

_____

_____

_____

Handled at GT by: _____ Date: _____

Description of correction: _____

_____

_____

_____

_____

D-48-656

KNOWLEDGE WORKER SYSTEM MILESTONES REPORT

Prepared Under Contract
DACA88-90-D-0006-0007

Submitted to:

Department of the Army
CONSTRUCTION ENGINEERING RESEARCH LABORATORY
Champaign, Illinois

Prepared October 22, 1990 by:
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia

KWS Delivery/Development Schedule and Milestones Report

The following milestones are proposed for CERL contract DACA88-90-D-0006-0007 (GT contract D48-656):

Oct 22 90	Design a plan for testing and bug report format
Oct 29 90	CERL will respond to testing plan
Nov 05 90	Final written report of test plan
Nov 19 90	A version of KWS will be delivered which contains the following features: * Todo window including all features present in the KWS prototype. * Supervisor windows including all features present in the KWS prototype. This includes all windows for maintaining the hierarchy of events, tasks, subtasks, and steps and for assigning subtasks. * Underlying relational database consisting of Oracle accessed through Gupta SQL Windows. * Included with this version will be the data developed by McClendon Automation converted and loaded into the Oracle database.
Nov 19-23 90	CERL will return comments on the user interface and functions of the version delivered on Nov 19 (on-site at Georgia Tech).
Dec 17 90	Return modified version of KWS to CERL.
Dec 17 90	A version of KWS will be delivered containing the first version of the scheduler.
Dec 31 90	Oracle Server machine delivered to CERL.
Jan 03 91	Oracle Server machine delivered to Tech.
Jan 10 91	Oracle Server setup at Tech.
Jan 14 91	Notification that KWS is ready for demonstration
Jan 14 91	Demonstration/briefing of KWS
Jan 14 91	CERL will review software and return comments
Jan 24 91	KWS version 1 complete

D-48-656

KNOWLEDGE WORKER SYSTEM
LAN USERS GUIDE

Prepared Under Contract
DACA88-90-D-0006-0007

Submitted to:

Department of the Army
CONSTRUCTION ENGINEERING RESEARCH LABORATORY
Champaign, Illinois

Prepared February 1, 1991 by:
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia

Chapter 1. Introduction

This manual describes the local area network (LAN) at the CEMP-P offices. It is intended to be read by users at every level of computer proficiency. The material in this manual is organized to start out with the basic concepts, then discuss the menu, and finally moves on to describe information necessary for some one who may be modifying the system.

No manual is able to describe a changing system, unless the manual is changed along with the system. Therefore, it is important that this manual be updated whenever changes are made to the menu, or the organization of the LAN.

Concepts

A local area network consists of one or more servers which share resources with client machines. A server is just a computer dedicated to sharing resources. Some examples of the kind of resources a server can share would be disks, printers, or modems. A client machine is the computer on your desk (or any of the computers on your colleague's desks.)

When your computer is sharing resources provided by a server, the resources appear to be directly attached to your computer. For instance, if you are sharing a laser printer, and a disk from the network then your machine will act as if it had that printer physically connected to it, and the extra disk inside it.

Before you can share resources from the network, you must identify yourself. The reason you must do this is to verify that you have permission to use the network resources. This identification process is called logging in.

Every server, and resource on the network has a name. The servers in your office are named CEMP1 and CEMP2. The following table lists the resources attached to each server.

Name	Description
CEMP1	
CANNON-1	Cannon LBP3 printer
HP2-1	HP Laserjet II
HP2D-1	HP Laserjet IID
IBM-1	IBM 4019 printer
IMAGEN	Imagen printer
CEMP2	
CANNON-2	Cannon LBP3R printer
HPPLT-P	plotter
HPPLT-T	plotter
HP2-2	HP Laserjet II
IBM-2	IBM 4019 printer

(Additionally, CEMP1 shares private disk space for each user on the network. The name of the users private disk space is the same as the users login name.)

When using any command to refer to a network resource you must give both the name of the server and the name of the resource. For example to refer to the imagen printer connected to CEMP1, the format of the resource name is \\CEMP1\IMAGEN. You can refer to any resource on the network by constructing a name using the format:

\\the server name\the resource name

There should be no spaces in this name.

Chapter 2. Standard Setup

Unless you change one of the configuration parameters (explained later), your machine will start in the standard configuration. In the standard environment, you will be automatically logged into the network and the menu will start. Because you are automatically logged into the network, you can (for the most part) forget about network commands, and use your machine as if it had 3 printers, and 4 disk drives.

The large number of printers available to you can make it a little harder to direct a printout to the proper printer. By standardizing what printers you use, printing documents can be made a little easier. In the standard setup your machine acts as if it had 3 printers connected to it. These three printers connected to your machine are: your local printer, the imagen for printing IOLA forms, and a laser printer for printing other documents. DOS, the pc operating system, refers to printers by the names LPT1, LPT2, and LPT3; in the standard setup these are associated with the dot matrix printer in your office, the imagen, and a laser printer respectively. The default laser printer for printing documents was chosen for you when the system was set up, it is usually chosen to be near your desk, if you can not find it Cuong Nguyen or Bill Crambo can tell you where it is. The next chapter will discuss how to change the set of default printers should you need to.

The applications available to you through the menu were setup to use the printer convention previously discussed. For instance in Word Perfect, when you select a dot matrix printer from the list of available printers, your printed document will be printed on LPT1 (the dot matrix printer in your office.) If, instead, you chose to use a laser printer, the standard Word Perfect setup will print to LPT3 (your default laser printer). Similarly, PC-IOLA will always send its output to LPT2 (the imagen printer.)

Some of the applications you use may ask you for a printer port before they will print. They are asking for you to chose: LPT1, LPT2, or LPT3. Remember when you are answering this question, you may chose to direct the output to the printer on your desk, the imagen printer, or a laser printer by entering LPT1, LPT2, or LPT3 respectively.

TIP When you are using tymcomm to connect to pax you can direct reports to a printer as follows:

1) Follow your normal procedure for printing a report, except, when PAX waits for you to start the printer, press ALT+R (the alt key and the R key at the same time).

2) You will be prompted to enter a file name. Instead of entering a file name enter LPT1, LPT2, or LPT3 to direct it to the printer of your choice. Press Return.

3) Press return again to start the report printing.

4) When the report has finished, press ALT+C. This will send the report to the printer, it will print immediately.

There are two advantages of this method over using Ctl+PrtSc. First, you can chose what printer to send your output to. Secondly when using a laser printer, you can get your report immediately rather than waiting until you exit tymcomm.

Chapter 3. Using Resources Not Provide In The Standard Setup

During the course of your work, you may find that the printers chosen for you when your machine was setup are insufficient to accomplish your task. Some reasons for this may be; you need to use a specific laser printer that provides functionality not on the default laser printer chosen for you, or the default printer you use is broken and you need to send your output to a different one until the default printer is fixed. This process is not complicated once you understand the steps involved.

As mentioned in the previous chapter, a DOS program refers to printers by the names (called printer ports) LPT1, LPT2, and LPT3. Therefore, the first thing you must determine is which of these names the program you intend to use expects. Word Perfect is setup to expect a laser printer to be connected to LPT3, you can save yourself some effort by using LPT3 for any laser printer you intend to print on from Word Perfect.

The steps you must follow are:

1) Determine which printer port your software is going to use.

2) Tell the network to disconnect the printer currently connected to the printer port you have chosen.

3) Tell the network to connect the printer you want to use to the printer port you have chosen.

If you are using the menu, there is an option on the "Network Services" menu to perform the above steps 2 and 3 for you. From the DOS command line, you may either execute the batch file `LASERS` which will provide you with a menu for steps 2 and 3, or you may type the network commands directly. The network command for connecting shared printers to printer ports is `NET USE`. For example, suppose you wish to connect the plotter HPPLT-T to LPT2 so you can use a chart making program. The following two commands would be issued.

```
net use lpt2: /d
net use lpt2: \\cemp2\hpplt-t
```

The first command disconnects any network printer which may already be connected to LPT2. The second command connects HPPLT-T (which is connected to the server CEMP2) to LPT2. It is not important whether you use upper or lower case names in these commands.

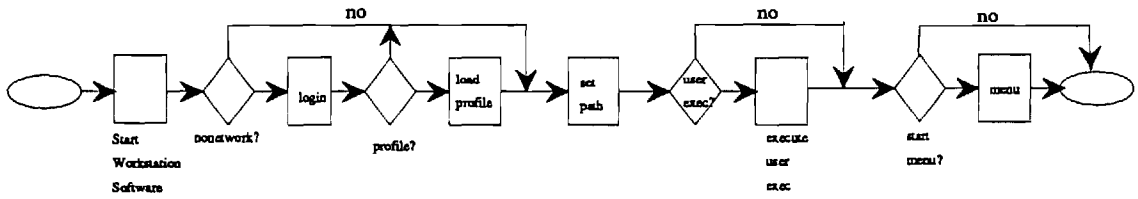
Chapter 4. Changing The Default Configuration

This chapter discusses how you can make changes to the standard configuration discussed it the previous chapter. In particular, this chapter will show you how to change the printers in your default printer set, turn on or off the automatic login to the network upon boot, and turn on or off automatic invocation of the menu on boot up.

Changing How Your Computer Boots Up.

When your computer first boots up, it executes a file called **autoexec.bat**. This file has been customized for you. YOU SHOULD NEVER EDIT THE `AUTOEXEC.BAT` FILES, ANY CHANGES YOU WANT TO MAKE TO YOUR STARTUP CONFIGURATION SHOULD BE MADE BY CHANGING ONE OF THE FILES IN THE `\MYCONFIG` DIRECTORY.

The following diagram shows the steps that are followed when your computer is started.



The steps that are followed are:

Start Workstation Software

The 3+open workstation software is started by calling the batch file `C:\3OPEN\STARTNET.BAT`;

Logon to Network

Next, the computer checks for the existence of a file named `C:\MYCONFIG\NONETWRK`, if it exists then the automatic login to the network is skipped, otherwise the user is automatically logged into the network.

If a file named `C:\MYCONFIG\IAM` exists, then the user name stored in it is used as the name to be logged into the network, otherwise the user is prompted for the user name.

Finally, the computer checks for the existence on drive H: of a network profile saved under the name the user logged in under. Thus if the user logged into the network under the name `JGOUDEL`, then the file the computer would look for would be called

H:\JGOUDEL.PRO. This file would be applied using the command NET LOAD H:\JGOUDEL.PRO.

Perform User Specified Setup

The PATH variable is set as follows:

```
PATH=C:\PBAT;C:\DOS;C:\3OPEN\DOSWKSTA\LANMAN\NETPROG;C:\UTIL.
```

These directories correspond to: the menu programs, dos commands, network software, and any utility programs you may add to the system.

> Note: The easiest way to add a utility program to the system is to place the program in the C:\UTIL directory.

Next the batch file C:\MYCONFIG\BOOTUP.BAT is executed if it exists.
This is the file you should edit instead of AUTOEXEC.BAT if you wish to change how the computer is configured when it boots up.

Start The Menu

Finally, unless there is a file named C:\MYCONFIG\NOMEN, the menu is started. Otherwise the autoexec file terminates, and you are presented with the C: prompt.

Chapter 5. Useful Batch Commands.

This chapter will discuss some batch commands that are used by the menu to perform various useful functions. The goal of this version of the menu program is to allow a person to start programs as easily from the command line (the `C:` prompt) as from the menu. This is accomplished by making the menu call a batch file for every menu choice. Thus a user running from the command line may also call the batch file to get the same results. A future version of the menu will contain the name of the batch file that is called in each menu selection description. All of these commands are stored in the directory `C:\PBAT`.

`CHKQUEUE`	Print a list of files in the printer queue.
`FIX`	This command restores both you path and you prompt to the same as it was when you started the computer. This is useful after some other program trashed your system. (Note: this command is duplicated at C:\, so if the path is really screwed up you can execute this by typing C:\FIX.
`IOLA`	Start the PC-IOLA forms program.
`LASERS`	Provides a full screen menu interface to help you change which printers are in the current set.
`LOGIN`	Login to the network.
`LOGOFF`	Log off from the network.
`MENU`	Start the menu program.
`NETLOAD`	Restore the default set of printers and disks.
`NETSAVE`	Save the current set of disks and printers as the default set. This set will automatically be connected whenever you login to the network.
`NETSTAT`	Show what network devices you are using.
`QUATTRO`	Start Quattro
`TYMCOMM`	Start Tymcomm.
`WP51`	Start Word Perfect 5.1
`WP42`	Start Word Perfect 4.2

Chapter 6. Useful Network Commands

This chapter will briefly describe a set of commands for manipulating the network from the command line prompt. These commands are more fully describe in the 3+Open documentation.

NET USE

This command allows you to connect or disconnect shared resources to you machine. Additionally, it will list all shared resources you are using.

The format of the command is:

NET USE

This command will list all shared resources you are using.

NET USE <local device> <resource to use>

This command will connect the resource you name to the local device you named. For example:

```
NET USE LPT2: \\CEMP1\IMAGEN
NET USE G: \\CEMP1\JGOUDEL
```

NET USE <local device> /D

This command will disconnect a shared resource. For Example:

```
NET USE LPT2: /D
NET USE G: /D
```

NET PRINT

This command allows you to see the status of anything you have sent to a network printer. For example:

```
NET PRINT LPT2:
```

would list all the reports waiting to print on the network printer connected to LPT2.

D-48-656

KNOWLEDGE WORKER SYSTEM
FINAL REPORT

Prepared Under Contract
DACA88-90-D-0006-0007

Submitted to:

Department of the Army
CONSTRUCTION ENGINEERING RESEARCH LABORATORY
Champaign, Illinois

Prepared November 30, 1990 by:
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia

Introduction

This document summarizes the final development plan for the Knowledge Worker System, Version 1.0 (KWS). The final plan is composed of the short term development plan, the testing plan, and the specifications checklist. This plan will describe the steps that will be undertaken by the Georgia Institute of Technology during the process of developing and testing a working version of the Knowledge Worker System. Version 1.0 will be based on a prototype version that was developed for CERL in 1988. This document will describe the changes that will be made in the prototype and the general plan for development until February 1991. The plan will cover such issues as the software platforms that will be needed to run the Knowledge Worker, the hardware platforms, changes that must be made since the development of the prototype, the user interface, user help facilities, the organization of documents, communications and networking, scheduling, the series of events which will constitute the delivery and set up of the product, and the procedure and forms used in the testing process. Information for this report was compiled from a review of the JAD Workshop, a report describing the lessons learned from the prototype, a presentation given by George Olive of Georgia Tech, and previously submitted documents describing the short term development plan, the testing plan, and the specifications.

Hardware Platform

The hardware required to run the Knowledge Worker System can be classified into three categories: 1) hardware required by each individual workstation, 2) hardware required at the central server location, and 3) hardware required for communications between the knowledge worker (workstation) and the central database site. Each KWS user must have a 386 class machine (Compaq 386/20e) with 5 megabytes of memory. In addition, a KWS workstation should include a hard disk with at least a 60 megabyte memory capacity, a mouse for the use of windowing utilities, and a VGA monitor. A math co-processor is recommended for speed considerations. A server database will be maintained at a central location; a Unisys 386 machine with 14 megabytes of memory will be used. The server machine will need at least a 330 megabyte hard disk, a tape backup unit, and an uninterruptable power supply. For communications purposes, a second Unisys 386 will be used as a gateway machine.

Software Platform

The software used for KWS will be used to integrate a variety of functions, including the user interface, data base utilities, and communications. KWS will run under Microsoft Windows version 3.0 and use customized windows software developed in the C programming language by Georgia Tech. For communications, KWS uses TymComm or VistaComm communications software, as well as 3+Open, 3+Open Internet, and 3Com TCP/IP (DDN Protocol). For accessing data base functions from a window environment, KWS will use Gupta SQL/Windows and Oracle. SCO Unix is required for the data base server.

User Interface

KWS runs under Microsoft Windows 3.0 and uses the windowing environment for the graphical user interface. The graphical viewing facility allows and provides for the ability to view KWS data in a hierarchical fashion, as well as the schedule data and attached documents. While viewing the scheduling data, the user will have the ability to group the data and view it by week, month, year, etc. While KWS is running, the keyboard will be set up to activate "hot keys." Hot keys will provide the user with the ability to invoke an often called

KWS function at the touch of a single program key.

Help

The help that is available to the KWS user will take in a variety of forms. First, a corpus of hard copy manuals will be provided with the delivery of the software. These will include a users' manual, training guides and a technical manual. In addition to the printed manuals, on-line help will also be available to the user. This help will be context sensitive, and the messages provided will depend upon the current mode of KWS. There will also be provisions made for human aided help. For the two weeks after installation of version 1.0 (February, 1990), a Georgia Tech representative will be on-site to provide support and answer questions. Subsequently, for an additional four week period, Georgia Tech will provide support by electronic mail and telephone.

Automatic Execution

One major goal of KWS is to perform many of the repetitive tasks that are currently done by individual knowledge workers. Since many of the tasks a user must do are cyclical, or must be done periodically, KWS will provide a facility for the automatic invocation of programs. This facility will allow a knowledge worker to start external programs and supporting software from within the Knowledge Worker System environment. McClendon Automation will also provide a facility which will automatically write PAX reports. In addition KWS will eventually provide methods for automating the process of entering the steps required to performing a subtask, as well as to automate the production of documents and reports.

Communications

The Knowledge Worker System consists of a data base server/host machine which can be accessed by different Kws with PCs in (possibly) different office locations over a 3+Open local area network. The communications provided by KWS will allow Kws to access all of the centralized data base information as well as communicate with any other KW. The Knowledge Worker System will also accommodate Kws working from a remote site by using 3Com and 3+Open communications software. The ability to access other computers will be provided by simple terminal sessions, as well as the file transfer capability. The users will be able to communicate with one another by the way of an electronic message facility. At first, only a notification daemon (message) will inform the user when a remote job is completed or an important task is added to the ToDo list. A more complicated electronic mail facility will be added in future versions.

Document Organization

In contrast to the prototype, KWS Version 1.0 will provide a less structured way of handling documents. KWS will provide the facility to relate any document to any task (event, task, subtask, or step) in the system. Besides providing a more flexible interrelated document structure, KWS will also provide automatic version control for documents whenever a new version of an existing document is created. KWS will also provide the ability to search for any document in the system based upon a keyword. A document search by similarity of

tasks (to the current task) and the ability to archive documents are planned for future versions.

Prototype Technical Changes

According the reviews of the prototype and its usability, there are four main issues that must be changed when developing the actual KWS. These have already been discussed in some detail. The four issues are 1) addition of a distributed database, 2) generalization of the hypertext structure, 3) implementation in a compiled language, and 4) the elimination of DOS as the underlying operating system.

The database chosen to support KWS is a completely distributed database. The data will be placed in a central location and will be accessible to all KWS users. The hypertext structure will be implemented as described in the preceding section on document organization. In the prototype, documents and programs could only be linked to steps. This restriction is not necessary and will be removed in Version 1.0. KWS will provide the ability to link documents and programs to steps, tasks, subtasks, and events. To increase the usability and speed of the system, the production version of KWS will be implemented in the C programming language. A customized interface to Microsoft Windows (version 3.0) will be provided, thus eliminating the need for users to directly access DOS while allowing them to execute DOS programs.

Implementation Milestones

The following are the major milestones for implementation of Knowledge Worker System, Version 1.0.

- First-cut of KWS Version 1.0	November 19, 1990
- Three one-week testing periods (CERL)	November 19, 1990
(CERL)	December 17, 1990
(CERL at GaTech)	January 15, 1991
- KWS, Ver 1.0 Demonstration to CERL	January 15, 1991
- Installation of KWS, Ver 1.0 at HQUSACE	February 16, 1991
- KWS, Ver 1.0 Turnover Demonstration	February 18, 1991
- Training of KWS users	February 20-21 91
- Support periods (2 weeks on-site; 4 weeks remote)	February 20 - April 03, 1991

Testing Plan for KWS Software

This section summarizes the testing plan to be followed by CERL and GaTech in evaluating the Knowledge Worker System. The first-cut of KWS Version 1.0 will be ready November 19, 1990. CERL will review the KWS software at GaTech between November 19 - 23, 1990. On December 17th, GaTech will deliver a second-cut of KWS, which will include the Scheduler. CERL will test KWS at GaTech between December 17-21, 1990. GaTech will demonstrate the completed KWS, Version 1.0 to CERL on January 15, 1991. CERL will spend the period of January 15 - 18, 1991 at GaTech in order to conclude software testing and verify that KWS, Version 1.0 is ready for installation at Headquarters, US Army, Corps of Engineers (HQUSACE) offices.

The process of reporting changes and bugs will proceed as follows. When a CERL representative recognizes an item that must be reported, the appropriate report form must be filled out. There is a separate form for changes, and a separate form for errors (bugs). On the change form, the CERL representative must fill in the date, the name of the CERL representative requesting the change, the software version number, and a description of the change. On the error report form, the representative must fill in the date, the name of the CERL representative reporting the error, the software version number, a description of the error, and a list of steps that produced the error. These reports will be physically handed to a GaTech representative during the testing dates specified above. The GaTech representative must sign and date the form after the correction was made, as well as provide a description of the correction on the error report form. GaTech will respond to the requests from the testing period by the beginning of the following period. Any requests that are submitted by CERL during the final period will be attempted to be corrected by the installation date. Any requests that cannot be implemented by the installation date will be processed during the support period that follows. A sample of the change and error (bug) reporting forms are attached in the appendix.

Following installation at HQUSACE and prior to release of KWS, Version 1.0 to users, GaTech will conduct a "Turnover Demonstration" for CERL and other Government representatives, e.g., members of the KWS User Group. The purpose of this formal demonstration is to assure the Government that the software is successfully installed and ready for daily use.

Knowledge Worker System Specifications Checklist

This section presents a checklist of specifications for the Knowledge Worker System, Version 1.0. The specifications have been divided into 12 categories which describe the functionality, hardware, and software of the system. These categories are: Help, Communications, User Interface, Data Organization, Automatic Operation, Todo list, Modifications to the master schedule, Viewing the master schedule, Task schedule, Control issues, the Software platform, and the Hardware platform.

A. **Help**
- [ ] Context sensitive
- [ ] Electronically submitted
- [ ] On-line tutorial
- [ ] 4 week phone support

B. **Communications**
- [ ] Terminal sessions
- [ ] File transfer capability
- [ ] Electronic notification of schedule changes
- [ ] Remote access to messages from other knowledge workers
- [ ] Remote access to all KWS functionality

C. **User Interface**
- [ ] View Todo list
- [ ] Colors used as visual clues to important information
- [ ] 'Hot keys' to invoke KWS functions
- [ ] Require user acknowledgement on important changes
- [ ] Pop-up reminders to be used
- [ ] Notes available from any window

D. **Data Organization**
- [ ] Version control for multiple versions of attached documents
- [ ] Document can be searched by keyword
- [ ] Automatic backup of data

E. **Automatic Operation**
- [ ] Automatic invocation of supporting software

F. **Todo List**
- [ ] Show tasks for which each knowledge worker is responsible
- [ ] Show when tasks are due
- [ ] Show priority of each task
- [ ] Show status of each task
- [ ] Show tasks that are in danger of becoming late
- [ ] Identify tasks that have a due date that is simply an estimate
- [ ] Show how much of task has been completed
- [ ] Show when a task should be started
- [ ] Allow scheduling of personal items
- [ ] Show "work drivers" (why and for whom the work is to be done)
- [ ] Allow entry of private tasks

G. **Viewing of Master Schedule**

[ ] Tabular display showing event, tasks, and subtasks
[ ] View predecessor tasks and status in STEP window

H. Modification of Master Schedule

[ ] Separate user interfaces
[ ] Add/Delete/Modify capability
[ ] Automatically maintain logic of schedule
[ ] Convert ad hoc tasks to routine tasks
[ ] Cyclical tasks need to be entered only once

I. Status

[ ] Maintained by knowledge workers
[ ] Subtask priority will be maintained
[ ] Latest start time will be sorting criteria
[ ] Knowledge workers can view predecessor task status
[ ] Color will be used to show important information
[ ] Temporarily reassigned subtasks can be seen on both knowledge workers' Todo lists

J. Control

[ ] Knowledge workers will be able to add private items to Todo list
[ ] Meeting/Appointment management will be left to existing packages
[ ] Automatic backup of servers will be supported
[ ] All knowledge workers will be allowed to make schedule changes

K. KWS Software Platform

[ ] Microsoft Windows 3.0
[ ] Customized Scheduler
[ ] VistaComm or TymComm
[ ] Custom windows software written in C
[ ] 3+Open
[ ] 3+Open Internet
[ ] Gupta SQLWindows/Oracle for SCO Unix
[ ] SCO Unix

L. KWS Hardware Platform

[ ] Compaq 386/20e with 5 megabytes of memory
[ ] Unisys 386 with
    14 megabytes memory
    330 megabyte hard disk
    Tape backup unit
    Uninterruptable power supply
[ ] Gateway machine - Unisys 386

number 1

THE KNOWLEDGE WORKER SYSTEM
Change Report Form

Report Date: _____ Name: _____

Software Version #: _____ Priority: CRITICAL HIGH MEDIUM LOW

Description of change: _____

_____

_____

_____

_____

_____

_____

_____

_____

Handled at GT by: _____ Date of Change: _____

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number 1

THE KNOWLEDGE WORKER SYSTEM
Error Report Form

Report Date: _____ Software Version #: _____ Name: _____

Description of error: _____

_____

_____

_____

List steps that produced the error: _____

_____

_____

_____

Handled at GT by: _____ Date of Correction: _____

Description of correction: _____

_____

_____